

U.S. Patent Application Serial No. 10/537,376
Amendment filed September 2, 2009
Reply to OA dated June 2, 2009

IN THE CLAIMS:

Listing of Claims:

Claim 1 (Original): A calcium phosphate base particulate compound satisfying the following expressions (a) to (d):

- (a) $20 \leq S_w \leq 300 \text{ (m}^2/\text{g})$;
- (b) $1 \leq T_g \leq 150 \text{ (mg/g)}$;
- (c) $0.005 \leq D_{x50} \leq 0.5 \text{ (\mu m)}$; and
- (d) $1.5 \leq D_{x50}/\sigma_x \leq 20$

wherein,

S_w : BET specific surface area (m^2/g) measured by nitrogen adsorption method,

T_g : heat loss (mg/g) per 1 g of calcium phosphate base particulate compound from 250 to 500°C,

D_{x50} : cumulative 50% average diameter (μm) counted from larger particle side based on the observation by transmission electron microscope (TEM),

σ_x : standard deviation $\{\ln(D_{x16}/D_{x50})\}$; and

D_{x16} : cumulative 84% average diameter (μm) counted from larger particle side based on the observation by transmission electron microscope (TEM).

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Claim 2 (Original): The calcium phosphate base particulate compound according to claim 1 further satisfying the following expressions (e) and (f):

(e) $0.5 \leq \alpha \leq 5$, wherein $\alpha = D_{xs50}/D_{x50}$; and

(f) $0 \leq \beta \leq 3$, wherein $\beta = (D_{xs90} - D_{xs10})/D_{xs50}$,

wherein,

α : dispersion coefficient,

D_{xs50} : weight cumulative 50% average particle diameter (μm) counted from larger particle side in the particle size distribution measured by laser diffraction (SALD-2000, manufactured by Shimadzu Corporation),

β : sharpness,

D_{xs90} : weight cumulative 10% average particle diameter (μm) counted from larger particle side in the particle size distribution measured by laser diffraction (SALD-2000, manufactured by Shimadzu Corporation), and

D_{xs10} : weight cumulative 90% average particle diameter (μm) counted from larger particle side in the particle size distribution measured by laser diffraction (SALD-2000, manufactured by Shimadzu Corporation).

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Claim 3 (Previously Presented): The calcium phosphate base particulate compound according to claim 2 further satisfying the following expressions (g) and (h):

(g) $0.005 \leq D_{xp} \leq 0.5$ (μm); and

(h) $20 \leq D_{yp}/D_{xp} \leq 200$

wherein,

D_{xp} : average fine pore diameter (μm) with which the mercury pressure penetration increase amount (integrated fine pore volume increase/ $\log(\text{average fine pore diameter})$) becomes the maximum value (D_{ys}) in the fine pore distribution in a range of 0.005 to 0.5 μm measured by mercury pressure penetration method,

D_{yp} : maximum value of the mercury pressure penetration increase amount (mg/l), and

D_{yp}/D_{xp} : amount of the average fine pore diameter.

Claim 4 (Previously Presented): The calcium phosphate base particulate compound according to claim 3, wherein the crystal state of the calcium phosphate base particulate compound is mainly hydroxyapatite.

Claim 5 (Withdrawn): A production method of the calcium phosphate base particulate compound which comprises the steps of:

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synthesizing calcium phosphate compound by reaction of a calcium compound and a water-soluble phosphoric acid compound in a pH range of 5 to 12,
aging the obtained calcium phosphate compound for 0.1 to 24 hours, and
heating the obtained calcium phosphate compound at 95 to 180°C.

Claim 6 (Withdrawn): A resin composition containing the calcium phosphate base particulate compound according to claim 1 in a resin.

Claim 7 (Withdrawn): The resin composition according to claim 6, wherein the resin is for films and 0.01 to 10 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the resin.

Claim 8 (Withdrawn): The resin composition according to claim 6, wherein the resin is for paper manufacturing and 10 to 1,000 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the resin.

Claim 9 (Withdrawn): A food composition containing the calcium phosphate base particulate compound according to claim 1 in a food product.

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Claim 10 (Withdrawn): The food composition according to claim 9, wherein 0.01 to 5 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the food product.

Claim 11 (Previously Presented): The calcium phosphate base particulate compound according to claim 1 further satisfying the following expressions (g) and (h):

(g) $0.005 \leq D_{xp} \leq 0.5 \text{ } (\mu\text{m})$; and

(h) $20 \leq D_{yp}/D_{xp} \leq 200$

wherein,

D_{xp} : average fine pore diameter (μm) with which the mercury pressure penetration increase amount (integrated fine pore volume increase/ $\log(\text{average fine pore diameter})$) becomes the maximum value (D_{ys}) in the fine pore distribution in a range of 0.005 to 0.5 μm measured by mercury pressure penetration method,

D_{yp} : maximum value of the mercury pressure penetration increase amount (mg/l), and

D_{yp}/D_{xp} : amount of the average fine pore diameter.

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Claim 12 (Previously Presented): The calcium phosphate base particulate compound according to claim 11, wherein the crystal state of the calcium phosphate base particulate compound is mainly hydroxyapatite.

Claim 13 (Previously Presented): The calcium phosphate base particulate compound according to claim 1, wherein the crystal state of the calcium phosphate base particulate compound is mainly hydroxyapatite.

Claim 14 (Withdrawn): A resin composition containing the calcium phosphate base particulate compound according to claim 2 in a resin.

Claim 15 (Withdrawn): The resin composition according to claim 14, wherein the resin is for films and 0.01 to 10 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the resin.

Claim 16 (Withdrawn): The resin composition according to claim 14, wherein the resin is for paper manufacturing and 10 to 1,000 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the resin.

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Claim 17 (Withdrawn): A food composition containing the calcium phosphate base particulate compound according to claim 2 in a food product.

Claim 18 (Withdrawn): The food composition according to claim 17, wherein 0.01 to 5 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the food product.

Claim 19 (Withdrawn): A food composition containing the calcium phosphate base particulate compound according to claim 3 in a food product.

Claim 20 (Withdrawn): The food composition according to claim 19, wherein 0.01 to 5 parts by weight of the calcium phosphate base particulate compound is added to 100 parts by weight of the food product.